CLAIMS

What is claimed is:

1. A control system for controlling a robot comprising:

a controller for controlling the robot, the controller calculating a profile of a commanded motion before said motion is performed, said motion being performed only when the controller determines that said motion is capable of being performed.

2. The system of Claim 1 in which the controller recalculates said profile until the controller determines that said motion is capable of being performed.

3. The system of Claim 2 in which motion parameters are adjusted until said motion is possible.

4. The system of Claim 1 in which a trajectory of said motion is calculated taking into account parameters including acceleration, jerk and velocity along multiple axes.

5. The system of Claim 1 in which the controller calculates said profile in sections.

6. The system of Claim 1 further comprising a drive system for driving the robot.

7. The system of Claim 6 in which the robot further includes a gripper arm for gripping articles, the drive system including a gripper arm drive for driving the gripper arm.

8. The system of Claim 7 in which the robot has a vertical column to which the gripper arm is movably mounted, the drive system including a vertical drive for providing vertical movement of the gripper arm relative to the vertical column.

9. The system of Claim 8 in which the robot has a carriage to which the vertical column is rotatably mounted, the drive system including a rotary drive for providing rotary motion of the vertical column.

10. The system of Claim 9 in which the drive system includes a bottom drive for driving the carriage of the robot.

11. The system of Claim 10 further comprising a vision system for verifying position of the robot.

12. A control system for controlling a robot comprising:

a drive system for driving the robot; and

a controller for controlling the drive system of the robot, the controller calculating a profile of a commanded motion before said motion is performed, said motion being performed only when the controller determines that said motion is capable of being performed, wherein motion parameters for said motion are adjusted until said motion is possible.

13. A method of controlling a robot comprising:

calculating a profile of a commanded motion of the robot with a controller before said motion is performed; and

performing said motion only when the controller determines that said motion is capable of being performed.

14. The method of Claim 13 further comprising recalculating said profile until the controller determines that said motion is capable of being performed.

15. The method of Claim 14 further comprising adjusting motion parameters until said motion is possible.

16. The method of Claim 13 further comprising calculating a trajectory of said motion taking into account parameters including acceleration, jerk and velocity along multiple axes.

17. The method of Claim 13 further comprising calculating said profile in sections.

18. The method of Claim 13 further comprising driving the robot with a drive system.

19. The method of Claim 18 in which the robot includes a gripper arm for gripping articles and the drive system includes a gripper arm drive, the method further comprising driving the gripper arm with the gripper arm drive.

20. The method of Claim 19 in which the robot includes a vertical column to which the gripper arm is movably mounted and the drive system includes a vertical drive, the method further comprising providing vertical movement of the gripper arm relative to the vertical column with the vertical drive.

21. The method of Claim 20 in which the robot has a carriage to which the vertical column is rotatably mounted and the drive system includes a rotary drive, the method further comprising providing rotary motion of the vertical column with the rotary drive.

22. The method of Claim 21 in which the drive system includes a bottom drive, the method further comprising driving the carriage with the bottom drive.

23. The method of Claim 22 further comprising verifying position of the robot with a vision system.